

Patent Claims

Sub C4

1. A nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of

- (a) nucleic acid sequences encoding the amino acid sequence depicted in SEQ ID No. 9 or in SEQ ID No. 14;
- (b) nucleic acid sequences as depicted in SEQ ID No. 8 or SEQ ID No. 13;
- (c) nucleic acid sequences, the complementary sequence of which hybridizes to the sequences mentioned in (a) or (b);
and
- (d) nucleic acid sequences deviating from the sequences mentioned in (c) on account of the degeneracy of the genetic code,

wherein the nucleic acid molecule encodes a protein, the reduction and/or inactivation of which in animals results in that the bones except for the skull bones become longer.

- 2. The nucleic acid molecule according to claim 1, which is genomic DNA.
- 3. The nucleic acid molecule according to claim 1, which is a cDNA molecule.
- 4. The nucleic acid molecule according to claim 1, which is an RNA molecule.
- 5. A vector containing a nucleic acid molecule according to any one of claims 1 to 3.

Sub C5

6. The vector according to claim 5, wherein the nucleic acid molecule is linked to regulatory elements which ensure the expression of the nucleic acid molecule in prokaryotic or eukaryotic cells.

cl
sub 2

7. ~~A host cell transformed by a nucleic acid molecule according to any one of claims 1 to 4 or a vector according to claim 5 or 6.~~

8. A method for preparing a protein which is encoded by a nucleic acid molecule according to claim 1, wherein a host cell according to claim 7 is cultured under conditions permitting the expression of the protein and the protein is recovered from the cells and/or the culture medium.

sub 3

9. ~~A protein encoded by a nucleic acid molecule according to claim 1 or obtainable by the method of claim 8.~~

10. An antibody against the protein of claim 9.

11. A nucleic acid molecule which is at least 15 nucleotides long and specifically hybridizes to a nucleic acid molecule according to claim 1.

sub 4

12. ~~A diagnostic composition containing a nucleic acid molecule according to any one of claims 1 to 4, a vector according to claim 5 or 6, a protein according to claim 9, an antibody according to claim 10 and/or a nucleic acid molecule according to claim 11.~~

13. A pharmaceutical composition containing a nucleic acid molecule according to any one of claims 1 to 4, a vector according to claim 5 or 6, a protein according to claim 9, an antibody according to claim 10 and/or a nucleic acid molecule according to claim 11 and optionally a pharmaceutically acceptable carrier.

14. A method for preparing a transgenic non-human animal, wherein a nucleic acid molecule according to claim 1 or a vector according to claim 5 or 6 is inserted

into a germ cell, an embryonic cell, an egg cell, or a cell derived therefrom, and a transgenic animal is produced from the thus transformed cell.

15. A transgenic, non-human animal which is transformed with a nucleic acid molecule according to claim 1 or a vector according to claim 5 or 6 or which is obtainable by a method according to claim 14.
16. A transgenic non-human animal, wherein the expression of a protein according to claim 9 in the cells is lower than in cells of a corresponding wildtype animal.
17. The transgenic non-human animal according to claim 16, wherein at least one genomic copy of a gene which corresponds to a nucleic acid molecule according to claim 1, is inactivated.
18. The transgenic animal according to any one of claims 15 to 17, which is a non-human mammal.
19. The transgenic animal according to claim 18 which is a mouse.

add a⁵ > 